



U.S. Department
of Transportation
**Federal Aviation
Administration**

Aviation Safety

800 Independence Ave
Washington, DC 20591

March 22, 2022

Exemption No. 18823A
Regulatory Docket No. FAA-2020-0620

Mr. Todd Graetz
Director
UAS Program & Machine Vision Services
BNSF Railway Company Technology Services
2400 Western Center Blvd
Fort Worth, Texas 76131

Dear Mr. Graetz:

This letter is to inform you that the Federal Aviation Administration (FAA) has granted your petition to amend Exemption No. 18823. This letter transmits the FAA's decision, explains the FAA's basis, and provides the conditions and limitations of the exemption, including the date the exemption ends, and lists the revised conditions and limitations.

The Basis for the FAA's Decision

By letter dated January 19, 2022, you petitioned the FAA on behalf of BNSF Railway Company Technology Services (BNSF) for an amendment to Exemption No. 18823. That exemption from §§ 107.15 and 107.49 of Title 14, Code of Federal Regulations (14 CFR) allows BNSF to operate the Skydio S2 and the Easy Aerial Osprey, small UAS weighing under 55 lbs., in sparsely populated and rural settings in accordance with waiver number 107W-2021-01756 or its successor, for the purposes of infrastructure inspection and patrol of rails.

The amendment you request would add the Skydio X2 to the underlying exemption.

In your petition, you indicate that there has been no change in the conditions and reasons relative to public interest and safety that were the basis for granting the original exemption.

The FAA's Decision

The FAA has determined that good cause exists for not publishing a summary of the petition in the *Federal Register*. The FAA has determined that good cause exists because the requested amendment to the exemption would not set a precedent and any delay in acting on this petition would be detrimental to BNSF.

The Skydio X2 small UAS was approved for use in accordance with waiver number 107W-2021-01756 but was not listed on Exemption No. 18823. Therefore, the Skydio X2 could be used under the terms of the waiver, but not under the terms of the previous exemption. So, the PIC

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could operate the Skydio X2 as long as he or she could perform the preflight checks in person while on site with the UAS. The FAA has determined that the Skydio X2 has identical functionality as the Skydio S2 with the difference that the Skydio X2 is equipped for night operations. BNSF stated in their previous petition that they would not operate at night and the FAA has not evaluated BNSF procedures for meeting Section 107.15 and Section 107.49 from a remote location. Thus, relief for §§ 107.15 and 107.49 of Title 14, Code of Federal Regulations (14 CFR) continues to extend only for daytime operations.

BNSF also petitioned for use of the Skydio X2 Dock. The FAA finds that the Skydio X2 Dock has identical functionality as the Skydio S2 Dock and meets the requirements for use with the Skydio X2 and Skydio S2 aircraft. The FAA considers the docking stations to be important for proper storage of the UA and for meeting the requirements of Sections 107.15 and 107.49, but finds so long as it compatible with the approved UAS and has all the elements that the FAA relied on for making the original decision; automated deployment, launch, landing, recovery, and stowage of the aircraft, protection from outside environmental conditions, automated charging capabilities, aircraft health status, sufficient amount of cameras with enough visual acuity to provide detailed preflight information, and the ability to relay accurate weather information; specific approval for upgraded docking stations is not needed.

The FAA has determined that the justification for the issuance of Exemption No. 18823 remains valid with respect to this exemption and is in the public interest. Therefore, under the authority provided by 49 U.S.C. §§ 106(f), 40113, 44701, and 44807, which the FAA Administrator has delegated to me, I hereby grant BNSF Railway Company Technology Services an exemption from 14 CFR § 107.15 and 107.49 to the extent necessary to allow BNSF to the extent necessary to allow BNSF to operate the Skydio S2, Skydio X2, and the Easy Aerial Osprey, small UAS weighing under 55 lbs., in sparsely populated and rural settings in accordance with waiver number 107W-2021-01756 or its successor, for the purposes of infrastructure inspection and patrol of rails, subject to the following conditions and limitations.

Conditions and Limitations

1. Operations authorized by this grant of exemption are limited to the Skydio S2, Skydio X2, and the Easy Aerial Osprey. The use of any other unmanned aircraft system (UAS) for the proposed operations under this exemption is prohibited unless the FAA issues a new exemption or an amendment to this exemption that covers the additional UAS.
2. All operations conducted in accordance with this exemption must also be conducted in compliance with waiver number 107W-2021-01756 or succeeding version of waiver number 107W-2021-01756.
3. This exemption only applies to small UAS operations conducted for infrastructure inspection and patrol of rails. The exemption extends to training, currency, or proficiency flights associated with the approved operations under this exemption.
4. BNSF must, at all times, comply with all applicable manuals and procedures provided in support of the requested relief. Where discrepancies exist between the conditions and limitations of this exemption, the associated waiver, and other operating documents disclosed in Attachment 1, the most restrictive terms apply.

5. BNSF must petition for an amendment to this decision if BNSF or FAA updates or revises any of the operating documents, training program, aircraft systems, operating parameters, or other supporting documents that would affect the basis upon which the FAA granted this exemption. The petitioner must track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The petitioner must submit such updates by contacting the FAA's Flight Standards Service, General Aviation and Commercial Division (AFS-800), 800 Independence Avenue, SW, Washington, DC 20591. Telephone number: 202-267-1100, Email: 9-AFS-800-Correspondence@faa.gov.
6. This exemption, a copy of waiver number 107W-2021-01756 or its successor, and all operating documents must be accessible to the remote PIC during all operations that occur under this exemption and must be made available to the Administrator upon request.
7. BNSF must designate a remote PIC for each flight and retain the information in accordance with waiver number 107W-2021-01756 or its successor. The designated remote PIC has the ultimate responsibility for the entire flight and must ensure its safety.
8. Flight planning must be performed in advance of the flight through mission definition. Each profile must be created by a qualified and trained individual according to the parameters defined for the mission. Each profile must contain all of the following:
 - A mission goal (e.g., linear inspection of a section of a subdivision by a set of aircraft, deployment of one unmanned aircraft for loitering and surveillance at a specific location);
 - A geographical area of coverage, with analysis of LTE coverage along the route of flight;
 - A definition of the requirements for execution of the profile, including the unmanned aircraft, required sensors, and required DAA components;
 - Flight plans for the small unmanned aircraft involved in the mission, including emergency plans (lost link, lost GPS signal);
 - Allowed and "no-fly" zones, which are designated using geofences in the small UAS flight planning software;
 - Specific "safe zones" where the small unmanned aircraft can land safely and without risk to personnel on the ground if mission abort is required when not near a hangar box.
9. BNSF must construct and confirm each flight plan more than once to ensure the small unmanned aircraft remains over BNSF property or rights-of-way at all times. Operations shall not exceed 100 ft. AGL. Abort procedures and avoidance maneuvers must be preprogrammed to keep the small unmanned aircraft over the BNSF property or right-of-way and to land only on BNSF property.
10. Once in the air, the remote PIC may not continue flight of the small UAS when the remote PIC knows or has reason to know that the small UAS is no longer in a condition for safe operation.
11. Prior to each flight, the remote PIC must conduct a preflight inspection in accordance with the procedures outlined in the BNSF's manual and determine the small UAS is in a condition for safe flight. The preflight inspection must account for all potential discrepancies, e.g., inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the small UAS, the remote PIC is prohibited from operating until the

issue has been documented; company safety personnel notified; the issue remedied; and the remote PIC determines the small UAS is in a condition for safe flight.

12. Prior to each flight, the remote PIC must effectively assess the operating environment, considering risks to persons and property in the immediate vicinity both on the surface and in the air according to procedures described in the ConOps. This assessment must include, but is not limited to, local weather conditions; local airspace and any flight restrictions; the location of persons and property on the surface; and all other ground hazards.
13. Prior to each flight, the remote PIC must ensure that all persons directly participating in the small UAS operation are informed about the operating conditions, emergency procedures, contingency procedures, roles and responsibilities, and potential hazards.
14. The remote PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the small unmanned aircraft to conduct the intended operation and to operate after that for at least five minutes, or with the reserve power recommended by the manufacturer if greater.
15. This exemption is not valid for operations outside of the United States.

Failure to comply with any of the above conditions and limitations, or its companion waiver number 107W-2021-01756, or its successor, may result in the immediate suspension or rescission of this exemption.

The Effect of the FAA's Decision

The FAA's decision amends Exemption No. 18823 to 18823A. This exemption terminates on June 30, 2023 unless sooner superseded or rescinded. This amendment adds the Skydio X2 to the underlying exemption.

To request an extension or amendment to this exemption, please submit your request by using the Regulatory Docket No. FAA-2020-0620 (<http://www.regulations.gov>). In addition, you should submit your request for extension or amendment no later than 120 days prior to the expiration listed above, or the date you need the amendment, respectively.

Any extension or amendment request must meet the requirements of 14 CFR § 11.81.

Sincerely,

/s/

Robert M. Ruiz

Acting Deputy Executive Director, Flight Standards Service